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ABSTRACT

This case study examined student perspectives in regard to a Web-based distance education graduate course in language education at a major university in the United States. Data were obtained from the six students enrolled in the course through observation by the instructor, interviews, and review of course documents and assignments. Four of the students reported only minimal experience with computers, and two were international students. It was found that student frustrations with the course could be grouped into three categories: lack of prompt feedback, ambiguous instructions on the Web, and technical problems. Students also reported feeling overwhelmed by the number of e-mail messages they were required to read and reply to in regard to the course. It is concluded that the students' frustrations in the course inhibited their educational opportunity. (Contains 59 references.) (MDM)

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Students' perspectives in a web-based distance education course

Running head: Students' perspectives

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Students' perspectives in a web-based distance education course

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ABSTRACT

Many authors in the distance education literature claim only the positive aspects of web-based distance education. However, at the same time, most of the literature consists of descriptive case studies, not research articles. This proposal presents a qualitative case study of a web-based distance education course at a major university in the United States. The study investigated whether students feel frustration in this course and if so, whether students' frustrations in this course inhibit their educational opportunity. In this study, frustrations of the students were found in three related sources: lack of prompt feedback, ambiguous instructions on the web, and technical problems. I conclude that frustrations of the students in this course inhibited their educational opportunity. This case study attempts to illustrate students' perspectives and to call attention to some fundamental issues in distance education.

Introduction

John was in a computer lab around 11:30 pm on Saturday. Many papers were scattered around the computer he was facing. John was a student in B555, a web-based distance education course, and participated in my research. Since we were introduced to each other a week before, when I conducted an observation and interview, I said hello to him and realized that he was working on the B555 class assignment. He told me briefly, "See we have to make sense out of this," by pointing out this week's assignment page.

printed out from the B555 web site. I remembered that he was waiting for the assignment specification via e-mail from the instructor since early in the week, and asked, "So, the instructor hasn't sent out the specification message for the assignment?" John said no.

Later, around 1 am, I returned to the computer lab. (In fact, I wanted to ask John if he had sent e-mail to ask the instructor about this week's assignment, but I doubted he would be there.) The lab was quiet and he was there alone. I was working on a different project, so I picked up my printing job and said to John, "Don't work too late." Then, John looked at me with vacant eyes and said that if I had been doing my interview now, I would get a totally different perspective about this course, because he knew that I was studying B555. He seemed so exhausted and frustrated. He looked like really wanted to talk to somebody to share his frustration.

This is a case study of students' perspectives on web-based distance education in B555[1], Computer Assisted Language Learning, offered by a major university in the United States. Every Monday, the instructor of this course usually sent an e-mail message explaining the requirement for particular modules, reflecting on the previous week's on-line discussion, encouraging students, suggesting questions for the upcoming on-line discussion, adding resources for assignments, and revising activities. However, when I saw John, the instructor had not sent any e-mail to specify the assignment for this week. John did not seem to know what to do in the computer lab by himself.

Recent cutting-edge technology enables us to implement distance education. The National Center for Education Statistics reports that during 1994-95 academic year 25,730 distance education courses were offered by higher education institutions. A third of higher education institutions in U.S. offered these courses in the fall 1995 (National

Center for Education Statistics, 1997). The number of distance education courses appears to be growing (Hanna, 1998; Roberts, 1996). Research studies indicate that the achievement and satisfaction of students in distance education are equivalent to those of the students in traditional classrooms (Johnstone & Krauth, 1996). Distance education provides opportunities for students who cannot be physically on campus to study with other students. Harasim (1993) asserts that computer-networks make the world connected, and that this concept is applicable to distance education. However, past studies fail to illustrate the details of students' perspectives on distance education.

As Windschitl (1998) notes in a current issue of Educational Researcher, research on the use of the World Wide Web (WWW) lacks disciplined scholarly articles. "The vast majority of published work is description of technology implementation in classrooms" (p. 28) or reflection of what has been done in distance education. One reason for this is because WWW is relatively young and is still in a testing stage, not an evaluation stage. Indeed, the lack of disciplined scholarly articles characterizes the field of Computer-Mediated Communication (CMC) as a whole.[2] According to Romizowski and Mason (1996), among published articles in CMC by 1991, "only some 10 % to 15 % were research studies." (p. 442). Moreover, Romizowski and Mason claim that little qualitative research based on observation and interviewing in CMC has been conducted. Windschitl also suggests that qualitative studies capture unique phenomena on the use of WWW. Using technology in education settings is one agenda of significant research. The field of education research seeks research on the use of WWW.

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[1] B555 is a pseudonym used in this study.
[2] The research on the use of WWW is included in the field of CMC.

Johnstone and Krauth (1996) prove the efficacy of technology, but fail to address surrounding issues, such as students' isolation, and effective advising from instructors. The literature review shows that the research on the use of WWW is short of analytical studies as well as qualitative studies (Burge, 1994; McIsaac & Gunawardena, 1996). Moreover, research on the effect of distance education has been focused on student outcomes (Ahern & Repman, 1994), but not on the affective side of distance education.

Research Question and Issues

This case study investigated students' frustrations in a distance education course, B555. The entire course was offered through a web site. After reviewing the literature, I found that only a small portion of it indicates students' isolation in distance education, although many authors (e.g., Besser & Donahue, 1996; Twigg, 1997) emphasize the importance of this issue. Thus, my primary research question was: How do the students in B555, in a major university, overcome the feeling of isolation in a virtual classroom to create the sense of a community of learning? However, while I was observing and interviewing my informants, I learned that students' isolation was not a problem in this course. Possibly because of the small class size, students supported each other and had a sense of a community of learning. The real issue in this course was the students' frustration, which, I also noticed, was another gap in the literature. Therefore, the final research question in this study was: Does student frustration in the B555 web-based distance education course inhibit their educational opportunity?

Nipper (1989) introduces three generations of distance education. The first generation was provided mostly through paper-based instruction; the second through integrated multimedia; the third was provided through two-way communications media.

In this study, the third generation of distance education, especially using networked computers, was explored.

In addition to the research question, key questions examined in this study were: What causes frustrations among the students? How do students deal with their frustration? Are there individual differences between students who are comfortable with technology and those who are not?

Background of the Site

The Students and Instructor

B555 had six master's students[3] from language education and special education, two of whom were international students. Two other students were instructors in the English as a Second Language (ESL) Program in this university. Four students had only minimal experience with computers, but one of them was enthusiastic about technology and spending thirty to forty hours a week for this course at the beginning of the semester. One student was very familiar with computers, and her friends had taken the same course last summer, so she not only did not have any problem with technology, but also knew the content of this course. The sixth student trained teachers in integrating computers into a curriculum. She was taking this course far from the university, so that she did not have direct access to university facilities. She was the only student who had taken a distance education course prior to B555.

The instructor was a Ph.D. candidate in the language education program, and an international student. Although she had experience as an English teacher, this was her first time teaching in the U.S. and by distance education. She had audited B555 over the

[3] Originally eight students registered for B555. However, two students who were taking it far from the university dropped after having technological problems.

previous summer. When she participated in the design team for the B555 web site, however, the course itself was designed by a faculty member in the language education program. The faculty member designed most of the web site, such as course activities, and reading assignments, but because of health problems, the current instructor took over B555. Since she had not designed the web site, she tailored the instructions on the web by sending weekly e-mail messages.

Ethical Issues

The human subjects committee approved this study and informed consent was obtained before each observation and interview. Pseudonyms were used in order to protect informants' identities. However, I realized that if I cited quotes from e-mail messages with their pseudonyms, it would reveal the subjects' identities because the instructor knew who said what in e-mail messages. In addition, since the class size was so small, as long as I described students' profiles in this document, the instructor would certainly know who was who. There was a substantial debate about research in cyberspace in 1995, after a research team at Carnegie Mellon University published a study of pornographic picture exchange on the Internet (See Kling, 1996).[4] Therefore, in order to protect the informants, I decided not to include individual students' profiles, though they would have helped readers understand this case more deeply. For the same reason, I did not identify authors of the e-mail messages.

Study Site

B555 was one of the graduate courses offered through distance education in the language education department. It was taught through a web site developed by graduate

students during the previous summer. This site contained reading materials, activities, discussion questions and additional readings organized along eight themes, such as authentic task, control, and time and feedback. The course syllabus and assignment instructions were available on the web, since B555 was offered as a web-based distance education course. The grade was decided based on five assignments: Reading responses (10 %); On-line discussion participation (15 %); Internet address book (10%); Portfolio (50 %); Final project (15 %). According to the syllabus, the purpose of the course was "to give participants a broad general view of computer-enhanced language learning and the place of the World Wide Web in the language learning classroom." After students enter their usernames and passwords, they would see the menu screen. This page used the metaphor of a traditional classroom, so that the student could be situated in their familiar environments. It appeared to welcome students. However, students' experiences in this course were somewhat different.

Methodology

Data Collection

I selected a case study methodology because I found it necessary to develop a "thick description" (Geertz, 1973) of a virtual classroom. The inquiry was an instrumental case study (Stake, 1995) based on a need for a general understanding of students in distance education. The language education department where this study was conducted offered several courses on-line. I chose one of the courses, B555, because the instructor permitted me to observe the on-line class and to interview her and her students. She also mentioned that she would like to learn from this study. Six students, five

[4] The study obtained users' information tracking by computer networks without their permissions and violated their privacy (Thomas, 1995; 1996). Researchers have to be careful when using this kind of data.

students at the university campus and one student from out of state, were enrolled, and all agreed to participate in this study.

The study used three different methodologies; observation, interview, and document review. First, I observed on-line classroom discussion to grasp how the instructor facilitated the dialogue among students. Observations in this electronic environment focused on the nature of students' discussion; the instructor's pedagogy, such as on-line discussion facilitation; the instructor's comments to students; and task assignments.

Secondly, I observed how each student interacted with the web site and conducted an interview immediately after the students had finished their tasks. Observation sessions lasted one to two hours. I observed four of the six students in the course. The interview following the observation lasted about an hour for each student. One student did not allow me to observe his interaction with a computer because he said that he would not feel comfortable if I observed him while he was working on this course, and another student was far from the university location. However, these two students and the instructor agreed to be interviewed for about an hour. Moreover, I collected data from informal conversations with two students as well as the instructor.

Different kinds of observations were conducted. One of the observations was a special event during the semester that provided opportunities for students to interact simultaneously. They had a field trip to SchMOOze University—a virtual university campus accessed by telnet from all over the world. SchMOOze University is a MOO specifically designed for an English as a Second Language learner. MOO is an acronym

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Because of the availability of the data from computer networks, it is easy to reveal informants' identities.

for "MUD[5] Object Oriented" (Bruckman & Resnick, 1998) referring to "a multi-user, text-based virtual reality." (Blankenship, 1993). Simply stated, MOO is programmed to provide an electronic space where people can meet on-line, have synchronous chat and discussion, and play games. The rest of the observations were conducted in university computer labs. However, because the nature of the observation was human-computer interaction, I asked subjects to "think aloud" (Ericson & Simon, 1984) while they used a computer. Although this methodology has a disadvantage that researchers cannot take account of every comment from informants during think aloud sessions, the methodology is widely used for usability tests; Dillon (1994) rationalizes the use of verbal protocol during the tasks to gain more accurate information than during retrospective verbal reporting.

Third, I examined various types of documents related to B555, such as the course syllabus, reading assignments, and the course description in the catalog. The syllabus explained materials that students would use, the purpose of this course, format and philosophy, class schedule, and requirements/evaluation including readings/responses, electronic discussion forum/participation, Internet address book, portfolios, and final project. In addition, with her permission, I reviewed the instructor's personal log.

Data Analysis

Three different kinds of data were analyzed (observation, interview, and document review data) simultaneously while data were collected. The analysis was triangulated in terms of methodologies, people, and time (Silverman, 1993; Stake, 1995). Furthermore, each interview transcript and interpretation were validated by informants.

[5] MUD is an acronym for "Multi-User Dungeon" developed for multi-players to play Dragons game in 1979 (Bruckman & Resnick, 1998).

During the data analysis, I realized my subjectivity, although I had not been aware of my bias when I conducted observations and interviews. Because of my background in Instructional Technology, I tended to favor the use of technology. However, no social scientists deny pre-notion of phenomena (Becker, 1998; Pershkin, 1988), so that we have to accept our subjectivities and deal with them. Therefore, in this study, I paid considerable attention to my bias toward technology while analyzing the data.

Students' Experiences in Distance Education

A Virtual Field Trip

The students took a field trip to SchMOOze University to experience virtual space. When people join SchMOOze University electronically, they see text-based screens although this virtual university uses metaphors of location. People can explore different virtual buildings (e.g., library, Mall, and meeting rooms) to meet people from all over the world by using simple commands, such as "go to east." The following observation was a special event in the middle of the semester that provided opportunities for students to have synchronous interaction.

The class meeting time was set at 8:30 pm. All students and the instructor were supposed to meet at a virtual meeting room, so that the instructor could see who was on-line. Kathy immediately started the field trip to SchMOOze University when I arrived at her apartment.

Kathy typed: @knock MMM (instructor's name)

but the computer replied

I don't know

Kathy said, "It doesn't understand. How stupid it is. Let's try with a different name."

Then she tried: @knock mmm

two or three more times, but it didn't work.

She murmured " I don't know what I am supposed to do. Maybe I am already in." She realized that several messages showed up on her computer screen. When she saw the following messages:

John smiles

John laughs

on the screen, she typed, "moan." Conversation on the screen went very quickly. It was very hard to catch up with what was happening. A student complained.

Sheryl: Please slow down.

However, the conversation never slowed down. When Kathy saw the following message:

MMM: everybody seems familiar with commands."

Kathy typed: I practiced this afternoon.

When she typed, Kathy seemed very careful about spelling and capitalization; she is an English teacher.

Sheryl: I like the action of calling rows.

Kathy explained to me and said, "I think what she means is 'calling role.' Sometimes it's confusing, the teacher and half of the students are non-native speakers."

Further, she said "I tried this afternoon, but at that time nobody responded to me. So, this is the first time that I see the conversation going like this" by pointing out many messages on the screen.

Then, she saw the message:

Julie: Julie is here

She tried to respond. While she was typing, she said "By the time I type in my response, the conversation is gone."

She tried to say "Welcome" to Julie, but a woman from Japan, an English teacher since 1980, joined the conversation. Several people who were not in the class who joined this discussion.

The first 30 minutes went very quickly, just trying to figure out who was there and what to do. Kathy explained to me, "This is the first time we talked together . . ." and complained "What are we supposed to do," glanced at her watch. It was almost 9 pm and according to the instructor's guideline, students were supposed to leave from the original meeting room, go to different buildings at SchMOOze University, and look for possible student activities. Therefore, Kathy typed: Are we supposed to move around now?

MMM: chose building

When she saw the instructor's message, she murmured "I'm going to be out, go to lobby, and go to Mall." However, she couldn't find anybody to talk to at the virtual Mall, so she typed commands to go back to the original meeting room. She saw on the screen that there were still students from the B555 class and their discussions were continuing.

She said, "Now, I'm back to the discussion." and typed: Guess I need to stay put.

MMM: go to the building

Kathy said, " I feel like nobody is answering my question," and complained "I've already been around the campus and . . ."

While she was deciding what to do next, the on-line discussion at the meeting room was still going on. When she saw a message referring to Ann, she typed: Who's Ann?

The situation was chaotic in that room because different conversations were happening simultaneously. Before finding out who Ann was, Kathy said, "Maybe I'll explore the campus now." She suggested going to a virtual bar to her classmates by typing: How about the bar?

Kathy saw everyone's agreement with her opinion on the screen.

When Kathy saw a message saying "Knock, knock," she figured that somebody knocked at her door and she typed: Enter

but she received no answer. Kathy muttered, " What am I supposed to do? I'm confused," and looked at the instructor's guide. Prior to this event, the instructor sent out the instruction for the SchMOOze University field trip and a map of the SchMOOze University through e-mail. Then, she assumed Julie was sending a message that knocks at her door because she saw Julie's message asking her a question, and tried to find where Julie was. Kathy typed a command to move where Julie was and Julie started sending a message to her.

Julie: I don't want to leave you at the bar alone.

Kathy laughed when she read the message. Julie tried to instruct her how to respond to knock in this text-based environment, but Kathy was still struggling. Kathy looked at her watch and said, "This is exactly an hour." She told me that, "If I have one complaint about this class, it is that time goes so quickly. I can be hooked up with a computer for a whole day and then realize that I haven't had a dinner or I haven't prepared my lesson plans."

Although Kathy seemed very well prepared for this special event, the virtual field trip, she was frustrated because she could not figure out what was wrong with her when

she could not operate her intended commands, e.g., simply responding to a knock. She could not ask for help with her problem from a real person, so she had to solve the problem by herself. I suspect that the incomplete text-based guidelines from the instructor might have caused this frustration.

Amy commented to me about this virtual field trip at a computer lab a few days after this event:

> At SchMOOze University, I got lost. Before this event, I had to set up software, some special software for MOO, the instructor said, on a computer. So, I downloaded it and set it up. I checked if I could go to the meeting room before the class activity time, then I went there successfully and thought everything was fine. But, when I went there to see classmates at the meeting time, I got lost. I could see their on-line conversation, but they couldn't see my messages. So, I called Sheryl and she taught me how to use commands and so on. I just forgot to put parentheses when I typed. That's why the classmates could not see my messages. I talked to other people from different places at SchMOOze University, but not my classmates. I was so frustrated because everyone else could do it, but why not me. Not only for the SchMOOze University activity, but I put in lots of time for this course overall, but I couldn't see the results. Like I paid a hundred dollars, but I only got ten dollars back. I probably spend a hundred minutes, but I can get ten dollars worth (personal communication, November 11).

Like Kathy, Amy was frustrated because of the problem that she had with operational commands at SchMOOze University. She expressed her frustration and even anger at herself. I assume that she felt as if she had been left out of the class because she could not use the commands properly.

Julie also had a negative experience with this virtual trip. Because of the slow connection from her computer, her responses delayed significantly. When I observed Kathy trying to talk to Julie on-line, Kathy had no response from Julie for more than 2 minutes. Finally, Kathy gave up the conversation with Julie. Another student also reflected back the feeling in a personal e-mail to the instructor next day after the field trip to SchMOOze University:

> I thought your [the instructor's] preparation for our visit to SchMOOze U was excellent . . . I did not enjoy our class excursion there however because the technology did not live up to expectations. I also felt more encumbered by knowing people there. I was more cognizant of hurt feelings and other people's frustration, it narrowed my exploration. (personal communication, October, 23).

There were, however, positive comments about the virtual field trip. John was enthusiastic about the SchMOOze University activity:

> I'd loved the MOO session. I felt like doing that, we're really sort of like a community. I was totally laughing, at my computer, laughing. It's so weird to laugh at the computer. But I was laughing because I really felt somebody's there talking. And I met a person that was kind of cold to me and asked me weird questions, and they never really answered my questions. That hurt, you know? So it's real feelings that were involved. It's kind of interesting (personal communication, October, 30).

John seemed very excited about the technology. In contrast with Kathy, Julie, and Amy, he had a positive experience with the field trip to SchMOOze University. In the interview, he mentioned his favorable view of technology, although he did not have much experience with computers before taking this course. Because Kathy and Amy expressed their uneasiness with the computer, I speculate that computer competency may affect their level of frustration.

At a Computer Lab After Midnight

As described at the beginning, John expressed his feelings when he was alone in a computer lab without any instructional help. The topic for this week was "feedback and time" and he was working on the assignment for the week, evaluating lesson plans using technologies for language education. He started talking to me.

> J: I am frustrated because I am here too long (laugh).
> I[6]: How long have you been here?
> J: Ohhhhh, I (.) . . . probably nine o'clock, I guess.

[6] I indicates the interviewer and the initials of the interviewees are used in this paper.

> I: Four hours?
> J: Yeah. So, my eyes are tired. Of course, a part of the problem is not totally the class's fault. Part of the problem is finding things really interesting. They don't completely relate to the class. I mean, we are looking for things, lesson plans that we have to evaluate, right? And there are all kinds of great lesson plans. I am looking for ideas for my classes and I just get stuck. Then by the time I'm at the place where I really need to be doing my work, I'm totally frustrated because I really wanna go home. I don't wanna be here anymore. That's one thing. There's nothing wrong with that, well maybe just a little. I don't know.
> I: Too much information?
> J: Perhaps. I mean these links on the B555 web site have all the lesson plans that we can give to a class. I think this one [pointing to a link], just tons and tons of activities, but most of the stuff on these, I don't like. So, I don't wanna spend my time. Okay, number one, that's not very much stuff. Number two, stuff on there, I don't like. That gives me very little to go with. I mean that stuff I wouldn't use. I mean it could be better if I could make my own lesson plan or something and then, talk about how I would use assessment in it. So, anyway, I've got a couple of things I wanna use for the B555 class assignment, but I feel like it's sub-standard. Or not exactly how I would wanna define it if I would be looking for something to fulfill the requirement. Just all of this together. These all three problems together and that's two, none of them are really terrible, but I am just frustrated in general (personal communication, November 11).

When I met John, he was extremely frustrated and he had more than one source for his frustrations. He mentioned that he still had not received specifications for the assignments from the instructor. So, he still had no idea what was expected on this assignment. He also had doubts about the professional development of the B555 web site.

> J: I just feel like the first part of the class was really well organized, and had a lot of really good information, like the first three chapters on the B555 web site, but last few chapters, I feel a little bit . . .
> I: Only this chapter or?
> J: No, last few chapters have been . . . The readings haven't been as good and they haven't been connected quite as well to the topics that we are talking about. You really have to find something. I just wish that last few, especially this one . . . I just don't feel like it's a very interesting chapter. . . . I wonder, I just have a small nagging doubt in my mind that, maybe when whoever put this together, the class, they really put a lot of work at the beginning, did a good job, but not as good a job at the end of it. (personal communication, November 11).

When I left the computer lab, John returned to work on his assignment and declared: "I will finish this work anyway. It'll probably take an hour and it may not be a good work. (.) But just do it." It was almost 1:20 am. He said to me in a tired voice, "You have a good night, and I'll have a good night."

Interactive Communication Tool: E-mail

Students and the instructor in B555 generated quite intensive on-line discussions through e-mail. The number of e-mail messages in the week of October 19th was 35, and this volume was not uncommon throughout the semester. Later in the semester, students confessed that they did not read other people's comments before writing their e-mail messages. One student expressed her problem of being behind via e-mail. In the middle of the semester, when the other students intensively discussed a particular topic within two days, she did not have any comment during the period. After a student summarized the overall discussion in his e-mail, she sent an e-mail that had a subject line saying, "Ah . . . I cannot catch up with all of you : ([7]" She was one of the students who wrote the least e-mail messages to the on-line class discussion. During interviews, some other students also commented that these e-mail messages were overwhelming, and consequently they fell behind.

Amy logged into her computer system and started to copy all e-mail messages on to a word-processing file. When I asked her a reason, she said that she didn't want to waste paper and if she printed out from the e-mail system, it would look like a lot to read, although it took time to copy the messages. "After that, I delete the messages because it's too much e-mail." She told me that her routine work for B555 was to: print out all

[7] This mark is used frequently in text-based communication to show the message sender's sad feeling.

the e-mail messages for B555 in a word-processing document; print out all the readings for this course; read the e-mail messages and reading assignments at home.

Eric commented about the overwhelming e-mail messages as well:

> I don't like, I have to say, I don't really like turning on the computer and finding that I have eleven messages on my e-mail. It's a pain. I mean to answer that things, just talking in conversation would be so much easier, rather than replying and doing all the stuff you have to do. So, that is just time-consuming, but it is a part of at distant (sic). I think if you are doing that, you have to be aware that you're gonna be spending more time with computer problems, not getting on-line, software, freaking out, crashing, whatever it's gonna happen, it gonna take you a lot longer, waiting a line at a lab. There are so many things that make it kind of difficult to do (personal communication, November 13)

The students felt overwhelmed by the number of e-mail that they received throughout the semester. It appeared that students were competing with each other, or felt a duty to produce a volume of e-mail messages. However, on the syllabus for B555, the requirement for electronic discussion participation was "At least 5 times during the course, you should contribute to the class discussion forum," although the syllabus then said "Participants are expected to check the list daily . . . " The size of the students' contributions to the on-line discussion was far beyond 5. Harasim's study (1987) reports that students tend to spent longer on-line than the course requires and I found some of the reasons for this phenomenon.

The literature indicates this drawback of asynchronous CMC While the advantage of CMC is that it is free from time and location constraints (Ahern & Repman, 1994; Burge, 1994; Harasim, 1990; McIssac & Gunawardena, 1996) as well as high interactivity (e.g. Ahern, Peck, & Laycock, 1992; Harasim, 1993; Henri, 1992), it is also very demanding for students and instructors to read all the messages (Hara, Bonk & Angeli, 1998; Kang, 1998; Wiesenberg & Hutton, 1995).

The instructor also commented that at the beginning of the semester she was spending all day doing nothing but reading and responding to e-mail messages. Later in the semester, she was able to reduce the workload, but still spent large chunk of time on this course.

Understanding Students' Perspectives

No Physical Existence, No Feedback

In a web-based distance education situation, students do not see each other or their instructors. This absence of physical cues led to some frustration among students.

John was working on one of the B555 activities in a computer lab and reading e-mail messages. He pointed out an e-mail message from the instructor and said:

> I agree with her, but I am not sure if I should send a message saying, "I agree." That's the problem with this e-mail. If this is the classroom, you can just nod your head to show your agreement. I am not always sure that if I am contributing enough or not. Other people, like Julie and Kathy, are really active. I feel a sense of competitiveness. So, my survival skill is not to respond. In fact, I haven't gotten any feedback about my contribution. I cannot tell from the e-mail. You can tell from the classroom what the professor thinks about you from the body language and the way they talk. So, I am not feeling that I'm getting enough assessment. I haven't gotten any grade for this class, but most of the grade is from the portfolio, so it's OK, I guess. (personal communication, October 30).

Eric also indicated his frustration with not getting enough feedback:

> One of the problems is that I'd like to have feedback. A kind of constant feedback. With the class, you don't really (.), especially this distance edu., I guess you don't get that kind of feedback. (personal communication, November 13).

Sheryl expressed the lack of immediate assistance from the instructor as well as the difficulty of finding information on the Internet.

Sheryl was working on her assignment for the B555 course. She started the Netscape browser, went to the Yahoo Education site, and typed keyword, i.e., "instruction to evaluating electronic learning." The computer responded:

There is no web site to match your inquiry.

She looked unhappy. There was nothing she could find from this web site regarding her key words. (I thought she used too many keywords. It would be nice if one of the class sessions was teaching tips and techniques on how to search into the web.) So, she went to the Altavista search engine web site where she could inquire web sites by entering keywords. She explained, "one of my friends told me that Altavista is much better." By using Altavista, she found one web site, but that page wasn't what she was looking for. She did another inquiry by using the keywords, "educational assessment." Now, she found too much information, so she went to the refine page to narrow down her inquiry by adding "assessments," "education," etc. She seemed to be finding a reasonable list of the sites for her topic. She went through the list and decided which pages she should print out. She found two. While she was assessing the web sites, she also read the e-mail instruction from the teacher again to make sure she was on the right track. She carried a 3-inch-thick folder that contained all the e-mail messages for this course. She printed out the third reading article from the web. Sheryl went to the web site that was referred to in the e-mail instruction, but she did not have any luck finding the relevant readings on this site either.

She clicked the Net Search button on the Netscape menu and went to another search engine, InfoSeek. She explained, " I am not satisfied with these articles that I found so far, so I'm doing more research." She typed, "educational instruction and

assessment." The list of web sites did not satisfy her. Next, she typed "classroom instruction." She glanced over the list, but it did not meet her expectation. Then, she typed, "instruction for on-line language learning," which brought up a new list. She clicked one link which she did not like, nevertheless, she found a specific reference, the Computer-Assisted Language Learning page. This seemed relevant because this was the title of this class! However, when she tried the links on that page, none of the links were working. Whenever she clicked one, the error message appeared. She could not reach any web sites and was not able to find the sites she was looking for. She told me that "this part is most frustrating; finding the information from the web." She compared this experience with the other B555 class taught in the summer. She did not take the class, but had heard about it. "They had more resources. They saw a teacher in person, so they might have had the same problem, but not as much frustration as this.

Interpretation

In contrast to his positive comments on the virtual fieldtrip, John seemed to be unsure about the appropriate attitude in an electronic environment. I assume that one of his frustrations was caused by a lack of feedback from the instructor. Because he could not see his instructor physically, and could not determine the instructor's expectations, his anxiety level might have increased. Eric had the same problem. This issue of lack of physical appearances is identified in the literature. Kuehn (1994), Harasim (1987), and McIsaac and Gunawardena (1996) caution that the lack of communication cues is a disadvantage of CMC because people cannot use any nonverbal cues, such as gestures and facial expressions.

I saw the same frustration with Sheryl. Her frustration came from a lack of immediate help. I also assume that one of the reasons she could not find the appropriate information is her lack of the proper skills to search for information on the Internet. This may be a hole in the instruction of this course.

The lack of prompt feedback from the instructor was certainly a major frustration for students because they were concerned about their performance. "The concept of interaction [including feedback] is fundamental to the effectiveness of distance education program as well as traditional ones." (McIsaac & Gunawardena, 1996, p. 407). Later in the semester, the instructor realized that she needed to give more feedback to her students. In her weekly announcement on November 10, she apologized not providing "enough and prompt feedback."

Technological Problems

The following interview concerned the frustration with technological problems and the absence of personnel to provide technical support. Unlike the other students, the interviewee was taking the course from a distant site. She indicated three areas of frustration, the biggest of which were technology and the inflexibility of the course schedule.

> First of all, inappropriate prerequisite statement. For example, there is nothing to say that you should know HTML, but our first assignment was creating a web site. Fortunately, I knew it. I'd explored learning how to do HTML by myself. If I didn't know, I just cannot imagine how to get through. Secondly, this course is very time specific. The course I took before, I could go in anytime and finish anytime. However, this course is very specific in terms of time. For example, I got into the class a week late and the instructor sent me e-mail saying that they had already started. As an old learner, I felt so intimidated. I felt pressure to catch up. Third, accessibility to technology. This is related to the prerequisite. There is nothing that says we should have access to a web server. However, when we developed the web site as an assignment, we had to have the server access. Since I work for a school, one of the technical people helped me to connect to the

> web server. If I didn't have these resources here, I would have dropped this course.
>
> I don't have any access to the wonderful computer labs in the university. I don't have a [electronic] student locker and software that are available on campus. (personal communication, October, 31).

In addition to observations and interviews, students' on-line discussion through e-mail gave me insights into what was happening during the class. Because this course was offered completely through distance education, I had no opportunity to have classroom observation, although I observed students individually while they were working on their computers. Reading students' e-mail served as another substitute for physical classroom observation. Some students expressed honestly their anxieties and frustrations with the course in their messages. For example, on Friday, 17 October at 19:47:56, a student wrote the following message to the instructor regarding a technical problem:

> I have spent one hour trying to follow your directions. I am getting an error message. The first time I tried to download it as a zip file, the error says, cannot access this file. I am getting extremely frustrated : (

On Saturday, 18 October at 3:06:15, she wrote another e-mail message regarding the same technology issue:

> This computer is very frustrating. I would imagine it is like sitting in a class and only understanding some of what was said, then asked to answer a question. I have felt it. . . panic. . . isolation. . . frustration. . . anger. This has been a very good lesson. I will keep trying.

About 30 minutes after this message, on Saturday, 18 October at 3:27:05, this student sent out an e-mail message saying that she had solved this problem.

The instructor's personal logs offered a different perspective, and helped me better understand the class dynamics. The instructor expressed her problems and frustrations in the fact that she could not solve students' technical problems. For example, in one of her personal logs, she wrote:

> I may need to understand more about how network and ISPs (Internet Service Provider) work. This to me is a hardware issue that I really did not want to touch and that I don't know how much help I could give to people. But, Julie and the previous two real distance students (who dropped out after several frustrated experiences) keep pushing me to this knowledge domain. (personal communication, October 18).

Because of these e-mail interactions, the instructor knew that students had difficulty dealing with technological problems and felt frustration. During the interview, she commented:

> I think computer skill-wise, they [the students in B555] are not able to handle some of the assignments and exercises. And ordering, like we started from building web pages with very minimum help, even though we provided them with very good, we thought, very good job-aids, but still they had difficulties. Help themselves learn. They are not in that kind of mode yet. They still need help. I guess both them and us, we are not used to this kind of environment at all. If you are in a classroom, a teacher can lead them during the process, so whenever they have problems, we can just fix it, right on a spot. However, if you give them the job-aids, if there is anything wrong there, there is no way we know. There is no way we can fix it right away and make it smooth for them. So that's frustrating for them and also frustrating to me because sometimes you feel that you've done everything you could, but just it doesn't work out that way. (personal communication, November 18).

Interpretation

The student without direct access to technological hardware and support had to deal with technological problems that the other students did not experience. She was the only student who did not live near the university. Therefore, her frustrations were different from other students. I suspect that her technical support was inadequate, so that she had to be more concerned about technology than about the content of the course. However, some of the students also expressed their difficulties with technology during observations and interviews. Several studies (e.g., Burge, 1994; Gregor & Cuskelly, 1994; Kang, 1998; Wiesenberg & Hutton, 1995; Yakimovicz, A. D., & Murphy, K. L.,

1995) report students' frustration with technology during the evaluation of their distance education courses, but do not thoroughly investigate it.

Pedagogical Issue—Ambiguous Instructions

> Though I understand each sentence and word in the e-mail that the instructor sent us, I don't know how to use the instructions to compose the programming. Because in her instruction, sometimes I can follow steps 1 and 2, and then I can't follow from steps 2 to 3. So I go back to the beginning and start over. The instruction is all in text, no graphics because she sends it to us through e-mail . . , So, when I submit my assignment, I always put a note to her, "please let me know if I need to do more or if I need to delete something" to make sure if I do the things that I am supposed to do. Because I don't know exactly what the instructor wants. (Amy, personal communication, November 11).

In this interview, Amy expressed her frustration in two ways. The first regarded the e-mail instructions that the instructor sent each week. The second frustration was caused by the ambiguous instructions on the WWW site. In my document analysis, I concurred that these instructions were too simple, and could be interpreted in many different ways. For instance, one of the activity instructions on the web was:

1. Review the sample testware package that you have. What does it test? How do you think it facilitates learning? OR Visit one of these sites: [List of URLs]
2. Look at at least two electronic portfolios (student works) in Student Project page [URL]. How would you give feedback to the student?

OR

3. To create a quiz on the Web, here are some tools you can use: [List of URLs]

The instructor's intention was to give students flexibility. However, some students did not consider this flexibility as an advantage. Sheryl, for example, did not think that she was getting effective instruction because of the ambiguous instructions on the WWW site and in e-mail messages from the instructor.

> I: What's the biggest problem in this course?
> S: I think the biggest problem is the instruction of our assignments. I usually don't understand what she wants, either e-mail or from the web site. Actually I shared the print-outs with my friend. He is a doctoral student, and he looked at the instructions. He thought that our instructor was not a very good presenter because he also agreed that those instructions were so ambiguous that it's very confusing. There were no points at all. Sometimes, she takes all kinds of responses and she would say, " it's good you are creative," but sometimes I got her response that this is not what I want. So I felt very frustrated because we were supposed to be creative and that's what I came up with, but she said that's not what she wanted. That's the biggest problem.
>
> I was expecting some theories of those conditions [that were taught in this course], but I didn't learn a lot because there was very little instruction on the web. We have to learn from the class discussion, but the other classmates in this course are English teachers, foreign language education majors. They have more experience in this area, so they are talking something higher level, but I'm in lower level because I have no background in this field. So, I don't really catch them. I don't really catch the themes on these conditions. I don't even know the clearest definitions of those terms, but I think I learn a little, gained a sense of it. (personal communication, November 5).

Like Amy, Sheryl also gave up trying to clarify the instructor's expectation after asking her a few questions. Further, when I asked her what was the most frustrating thing, Sheryl answered:

> lack of teacher's support and teacher's clarification of her instruction. Usually I e-mail her if I have any questions and her answer is very ambiguous, too. So, I won't ask the second time. (personal communication, November 5).

Kathy's frustration was that she was uncertain what the instructor expected for this course because she could not see the instructor physically. She also gave me an example of how she misinterpreted the instructor's message in an e-mail message.

> The instructor has been good about responding immediately when you ask something. However, I have been in school in my life and I didn't realize how much I relied on my knowledge of what teachers are looking for, sort of, you know. You sit in a classroom with somebody and you analyze who they are and what they like and you cannot analyze because you've never seen them. So, you are only guessing it what teacher really wants.
>
> You don't know how to interpret what they say because you don't know the personality. Like one time, the teacher was making the joke and I took her seriously and it really hurt. She was saying that I can't remember what it was

> now, but something about that nobody is working . . . since none of you are working at this, maybe we should do such and such and I wrote her back, "what do you mean we are not working. I am spending 6 hours a day and she wrote back that said, "it was only a joke." So, things like that, but I think if you are, like, very careful in what you write and communicate often with people, you can put them easily to get to know you. (personal communication, October 22).

While students felt frustrated with this course, the instructor was also frustrated. Overall, the students' evaluations of the instructor were positive. All the students appreciated the support from the instructor. Some students even sympathized with her because she also had to handle so many technological problems in this course. In addition, the distance education format also led to problems interpreting the students' messages. I asked the instructor if she received much e-mail about ambiguous expectations in this course. Her answer was yes. "Sometimes they do give me some of this [complain of ambiguous instructions], right, but you know sometimes you don't really know whether it is just an excuse or it is real. You don't know."

Interpretation

The assignment instructions for B555 on the web site provided opportunities to triangulate interviewees' comments during interviews and observations. The problems I heard concerning assignment instructions for B555 from the students were confirmed on the web site. These problems were: (1) instructions for the assignments were too vague. Sometimes students did not understand what the instructor's expectations were. (2) This web site was developed for the same course offered in summer, and the summer course was offered in a traditional classroom, not by the web-based distance education form. Therefore, some instructions for activities were for the course in summer. For example, one of the activities instructed students to make teams. However, in the web-based distance education course, students had to work individually, so the instructions confused

them. (3) Because this web site was developed earlier, some links to the other web sites were no longer accessible.

It seemed that students did not know what the instructor's expectations were. The instructor knew that the instructions on the web were too ambiguous, so she tried to make them clear. For the final project, she sent out an e-mail saying "I think we need a set of very clear criteria so that you and I know exactly what you are expected to do and how your project will be 'judged'." (personal communication, November 10). However, this attempt did not succeed. A few students posted questions about her "clear criteria." Because not all the students were familiar with technology, some were already overwhelmed. Therefore, the ambiguous expectations for this course might have increased students' anxiety.

Dealing With Frustrations

The only way for Amy to deal with her frustration was to talk to a classmate whose native language was the same. Amy seemed to give up communicating with the instructor about her problems because she thought there was nothing the instructor could do to help her. Thereafter, Amy complained only to her friend.

> A: I am calling a friend every week, just to complain. She is a good listener, whenever I complained, she just listened and I felt better.
> I: Did you complain to your instructor?
> A: Once.
> I: Why just once?
> A: I complained once about the difficulty of searching on the web, and she gave me the tips for searching as I told you before. After that, I didn't complain because I felt stupid. I should have spent more time on this, but I couldn't because I'm too busy. If I hadn't taken this many courses and also work, I could (.) if you want to take this course, you have to spend time. I want to complain, but it's not the instructor's problem, or the class's fault. It's my problem. There is nothing she can do about it. (personal communication, November 11).

Despite all the frustrations encountered, John expressed a different view in an informal conversation. He believed that it was a good opportunity for him to have these frustrating experiences because now he understood what his students might experience when he teaches similar courses in the future. Furthermore, the instructor tried to help her students resolve their frustrations. Later in the semester, she started to ask students for their suggestions to improve tutorials and teaching materials. She got the impression that now students felt less frustrated. One of her messages to the students was:

> I'm more comfortable to let you face flaws now than before, because I feel that: (1) You have experience solving this level of computer problems. (2) You know that learning can come from failure and frustrations. (3) The communication channel that we happen to so luckily have helped too. (personal communication, November, 1).

Also, she stated the same issue in her personal log:

> It was from the MOO week that I started asking them for improvement ideas, and it seems to me that this opened a new door for communication. . . . All of a sudden they agreed that it is all right to be frustrated when following instructions that are with flaws, because flaws give opportunities to think and to gain real control . . . (personal communication, November 1).

Interpretation

If students could deal with these frustrations, this might not be a negative experience, as the instructor said. In fact, the students supported each other by sharing their frustrations personally or with all their classmates. I also believe that without this mutual support, none of the students would have gotten through this course. Some students felt a community of learning with their classmates. Bates (1994) claims that one of the major contribution of two-way technologies is allowing interactions among students as well as between students and instructors, and it is true that there was active interaction among students in this course. Many researchers assert the importance of virtual community to support students. (e.g., Burge, 1994; Jonassen, Davidson, Collins,

Campbell, & Haag, 1995; McIsaac & Gunawardena, 1996; Savard, Mitchell, Abrami, & Corso, 1995). In this case study, however, it seemed that some students never overcame their frustrations, despite a great deal of interaction with others. Such frustrations must not be ignored. Research with college students shows that high levels of anxiety decrease the storage and processing capacity of working memory and impede performing inferences (Darke, 1988a; 1988b). Koble and Bunler (1997) and Mason and Kaye (1990) are among the few researchers who have addressed the lack of student support in distance education.

Discussion

From interviews and observations (thinking aloud), two interpretations were formed in this study. It appeared that there were two levels of frustration among students in this course. The first level related to technological problems. Students without access to technical support were especially frustrated. Also, students whose computer skills were inadequate, like Amy, had technological problems. The second level involved the course content. Students were frustrated because of a lack of immediate feedback from the instructor and ambiguous instructions on the web and via e-mail.

It appeared that there was a gap in the teacher's perspective of the students' frustration. The instructor seemed to think that she had solved the problems of students' frustration by saying during the interview:

> They [the students] thought that the problem they had were basically their own; other people did not have the same problem until we opened up the conversion and they realized that, oh, yeah, we were all in the same boat. Now, they have this peer support coming in. That [problem], I think, we took care of pretty well. (personal communication, November 18).

However, her students sill expressed their frustration earnestly during observations and interviews late in the semester. Part of the reason for the instructor's misperception resulted from the fact that the students' e-mail regarding their frustrations were only the tip of the iceberg. Students did not express all of their frustrations.

I observed that in this distance education course, students' frustration originated from three sources:

- technological problems
- little prompt feedback from the instructor
- ambiguous instructions on the WWW site as well as via e-mail

and asserted that these frustrations were so overwhelming that some students gave up on the formal content of the course. The instructor's personal reflection note revealed that two other students who began taking this course from distant sites dropped it because they could not overcome technical problems. In addition, during interviews two students affirmed that they will not take distance education courses in the future because they could not deal with these frustrations anymore. Therefore, students' frustrations were serious problems in this distance education course.

Hidden Phenomenon

Surprisingly, few articles having negative perspectives are found in the literature of computer-mediated distance education. Specifically, the literature of students' frustration in computer-mediated distance education is scanty. A few authors identify this issue (e.g., Dede, 1996; Feenberg, 1987; Stahlman, 1996) but these are rather "socially-thin" (Kling & Tillquist, 1998) and do not indicate the social aspects of the problem. Even the few researchers (e.g., Burge, 1994; Kang, 1998; Kiesler, Siegel, &

McGuire, 1984; McConnell, 1990) who mentioned deeper social aspects of the problems in distance education did not really focus on students' frustrations. This topic has never been in the mainstream of discussion in distance education. I question why this phenomenon of students' frustrations has not been seriously studied and analyze the following four possible reasons.

First of all, the researchers including myself who study distance education may be biased toward technology. When reviewing the literature, I find many authors are affiliated with technology-oriented departments, such as educational technology, library and information science, or technology support centers. Therefore, they might have a favorable view of technology, such as seeing "distance education via technology as a potential silver bullet." (Twigg, 1997, p. 28). The special issue of web-based learning in Educational Technology (Hackbarth, 1997) is devoted entirely to technical issues (e.g., Starr, 1997) and teachers' perspectives (e.g., Berge, 1997). McIssac and Gunawardena state that "more than 23 % of the literature reviewed concerned issues related to technology and the role of the distance educator." (p. 421). Burge (1994) asserts that most of the literature on CMC in higher education is "cautious optimism to hyperbole." (p. 22). Thus, the field has not seriously addressed negative implications, especially from students' perspectives in distance education.

The second possible reason is that few qualitative research studies have been done (Burge, 1994; Windschitl, 1998), so that the actual dynamics of virtual classrooms are unknown. One qualitative study (Yakimovicz & Murphy, 1995) I found was conducted by an instructor of the course; The methodology of this study is clearly flawed, because students are likely to be polite to their instructor, thus making the data unreliable.

Research shows that people are even polite to computers, so that people tend to give favorable evaluations of computers when asked about their performance (See Reeves & Nass, 1996). McIssac and Gunawardena (1996) criticize the research literature in distance education because of its lack of rigor. "Although studies focusing on learners have received attention in the literature (18 %), it is largely descriptive." (McIssac & Gunawardena, p. 423, 1996). Wolcott (1990) claims that "informants [students] . . . do little talking" (p. 29) regarding qualitative research in education.

Third, at the end of the semester, students might make positive comments about the courses. For example, for the course I studied, a student posted a thank-you-note during the final week saying how much learning she had done, and how much she appreciated these learning opportunities:

> I do believe you all are the best classmates and instructor I have ever met. I can see your hard work, your enthusiasm, and your patience learning along. I'd like to say that the most successful condition I've learned from this class is: warm and supportive class atmosphere. (personal communication, December 1).

Therefore, since little research has studied their learning processes throughout the semester, students' frustrations have received disproportionately little attention. That is why the results of many studies are positive, including such findings as students enjoying their experiences despite their technical problems. (Gregor & Cuskelly, 1994; Yakimovicz & Murphy, 1995).

Finally, it is possible that past studies were conducted only with experienced instructors (e.g., Gunawardena, 1992), not with novices. More experienced instructors might better handle students' frustrations, technological problems, and ambiguous instructions to reduce the obstacles to distance education.

Final Remarks

Most of the articles in computer-mediated distance education (e.g., Barnard, 1997; Harasim, 1993; Yakimovicz & Murphy, 1995) discuss positive aspects of distance education, whereas only a few scholars examine the drawbacks. It is acceptable to fantasize about the future when a field is young, because these discussions can propel the field forward. Indeed, a similar pattern is found in another relatively young field, such as in the Business Process Reengineering literature (Kling & Tillquist, 1998). Distance education has great potential for providing rich environments for students. However, technology is not a panacea. It has trade-offs. Thus, it is time to seriously consider what is actually happening among students in distance education. We need to start discussing critically the phenomena in computer-mediated distance education. As Bates (1994) states, "it is a relatively untested assumption that advanced technologies, . . ., are pedagogically more effective than older" (p. 1577) technologies. I also question if technology can make better pedagogy. This study is a case study, so it is not appropriate to generalize my findings, but this case illustrates the frustrations that students can experience while taking a distance education course, and how frustration can inhibit their educational opportunity. I hope that this paper will elicit more attention to students' perspectives in computer-mediated distance education. A student's final remark for this course during the final week via e-mail was:

> I have one last thing to say to all of you, my classmates and the instructor. Basically, I liked this class. It gave me chances to realize my dream: learning and teaching language with computer has been one of my dreams since I was in college. I didn't know when implementing it things were way more difficult and complicated than I thought. That was why sometimes I didn't talk a lot in our discussion, because of my disability and depression. (personal communication, December 1).

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